

**Notice of Allowability**

Application No.

10/815,005

Examiner

Melissa J Koval

Applicant(s)

BEESON ET AL.

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Transmittal of New Application of March 30, 2004.
2. ☒ The allowed claim(s) is/are 1-34.
3. ☒ The drawings filed on 30 March 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 3/30/2004
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

In the Specification:

On page 1, section [0001], line 5, change

" \_\_\_\_\_ entitled "ILLUMINATION SYSTEMS UTILIZING LIGHT EMITTING DIODES" to -- 10/814,043 entitled ILLUMINATION SYSTEMS UTILIZING LIGHT EMITTING DIODES -- .

On page 1, section [0001], line 7, change

" Application Ser. No. \_\_\_\_\_ entitled "ILLUMINATION SYSTEMS UTILIZING MULTIPLE " to -- Application Ser. No. 10/814,044 entitled ILLUMINATION SYSTEMS UTILIZING MULTIPLE -- .

On page 2, section [0006], line 24, change

"Ser. No. \_\_\_\_\_ entitled "ILLUMINATION SYSTEMS UTILIZING LIGHT EMITTING" to -- Ser. No. 10/814,043 entitled ILLUMINATION SYSTEMS UTILIZING LIGHT EMITTING -- .

On page 14, section [0063], line 13, change " in U.S. Patent Application Serial No. \_\_\_\_\_ entitled "ILLUMINATION SYSTEMS UTILIZING LIGHT EMITTING" to

- - in U.S. Patent Application Serial No. 10/814,043 entitled ILLUMINATION SYSTEMS  
UTILIZING LIGHT EMITTING - - .

***Allowable Subject Matter***

Claims 1-34 are allowed.

The following is an examiner's statement of reasons for allowance:

The prior art of record neither shows nor suggests the projection system having all of the elements of claim 1 in combination and particularly a light-recycling illumination system comprising a light source for generating light, a light-recycling envelope, a light output aperture, a light collimating means, and an imaging light modulator "wherein the areas of said light output aperture area is area  $A_o$ , wherein said area  $A_o$  is less than said area  $A_s$ , wherein said light source and said light recycling envelope direct at least a fraction of said light out of said light recycling envelope through said light output aperture and wherein said fraction of said light exits said light output aperture and wherein said fraction of said light exits said light output aperture as uncollimated light having a maximum exiting luminance".

The prior art of record neither shows nor suggests the projection system having all of the elements of claim 20 in combination and particularly dividing the time period for each frame of said full-color projection display image into at least a first through third sub-frames, and during said first sub-frame "recycling a portion of said light of a first color back to said first reflecting layer to increase the effective brightness of said first

light source, partially collimating a fraction of said light of a first color, directing the partially collimated said light of a first color to said imaging light modulator and spatially modulating said partially collimated said light of a first color to form a first image;" and

during said second sub-frame "recycling a portion of said light of a second color back to said second reflecting layer to increase the effective brightness of said second light source, partially collimating a fraction of said light of a second color, directing the partially collimated said light of a second color to said imaging light modulator and spatially modulating said partially collimated said light of a second color to form a second image;" and during said third sub-frame "recycling a portion of said light of a third color back to said third reflecting layer to increase the effective brightness of said third light source, partially collimating a fraction of said light of a third color, directing the partially collimated said light of a third color to said imaging light modulator and spatially modulating said partially collimated said light of a third color to form a third image."

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Strobl U.S. Patent 6,356,700 B1 teaches efficient light engine systems, components and methods of manufacture.

Tiao et al. U.S. Patent 6,318,863 B1 teaches an illumination device and image projection apparatus including the same.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa J Koval whose telephone number is (571) 272-2121. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJK

  
**JUDY NGUYEN**  
SUPERVISORY PATENT EXAMINER